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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

ANH SI LE : ART UNIT: 1623

SERIAL NO: 09/276,014 : EXAMINER: OWENS JR., H.

FILED: MARCH 25, 1999 :

FOR: HYDROGENATED STARCH HYDROLYSATE

COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING DEPOSITED WITH THE UNITED STATES POSTAL SERVICE AS FIRST-CLASS MAIL WITH SUFFICIENT POSTAGE IN AN ENVELOPE ADDRESSED TO: BOX AF; COMMISSIONER FOR PATENTS, WASHINGTON, D.C. 20231 ON THIS 4TH DAY OF FEBRUARY, 2002.

BY: Barbara J. Miller

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APPEAL BRIEF

Sir:

This is an appeal from the final rejection dated July 31, 2001, concerning the above-identified patent application. A Notice of Appeal was mailed to the Patent and Trademark Office on December 10, 2001. This appeal brief is being submitted in triplicate along with a check for the required fee.

REAL PARTY IN INTEREST

The real party in interest is SPI Polyols, Inc. located in New Castle, Delaware.

RELATED APPEALS AND INTERFERENCES

On information and belief, it is respectfully submitted that there are no related appeals or interferences.

STATUS OF ALL CLAIMS

Claims 1, 2 and 4-13 are on appeal.Appealed claims 1, 2 and 4-13 are set forth in Appendix I, attached hereto.

STATUS OF AMENDMENTS FILED AFTER FINAL REJECTION

An Amendment After Final Rejection is being filed concurrently with the present Appeal Brief. Since the only action requested in the Amendment is the cancellation of claims 24 and 25, it is believed that the Amendment will be entered.

SUMMARY OF THE INVENTION

The present invention relates to a hydrogenated starch hydrolysate, and products comprising the hydrogenated starch hydrolysate, wherein the hydrogenated starch hydrolysate comprises:

- A. a content of hydrogenated monosaccharides, degree of polymerization equals 1, of from about 2.6 to about 7.7 wt.-%;
- B. a content of hydrogenated disaccharides, degree of polymerization equals 2, of less than or equal to 34.3 wt.-%;
- C. a content of hydrogenated trisaccharides, degree of polymerization equals 3,

of less than 15 wt.-%;

D. a content of hydrogenated oligosaccharides of hydrogenated quat- to deca-saccharides, degree of polymerization equals 4 to 10, of less than 30 wt.-%; and

E. a content of hydrogenated polysaccharides of greater than hydrogenated decasaccharides, degree of polymerization is greater than or equal to 11, of about 14 to about 38 wt.-%. (See the Summary of the Invention and claim 1)

The products produced from the hydrogenated starch hydrolysate usually comprise at least one secondary ingredient selected from the group consisting of colorants, intense sweeteners, fillers, flavorants, acidulants, plant extracts, vitamins and pharmaceutical active ingredients. (See pages 11-12 of the specification and claim 12)

In a highly preferred embodiment of the invention, the hydrogenated starch hydrolysate is used as a coating material which encapsulates malic acid or a mixture of acidulants. The thus coated acidulants can be formed into powder particles which comprise the malic acid or mixture of acidulants encapsulated within a coating of the hydrogenated starch hydrolysate. (See Examples 1 and 2 and claim 13)

THE ISSUES ON APPEAL

Claims 1, 2 and 4-13 stand rejected under 35 U.S.C. 102 (b) as being anticipated by Caboche (U. S. Patent No. 5,436,329). This rejection is respectfully traversed.

Claims 1, 2 and 4-13 stand rejected under 35 U.S.C. 103 (a) as being unpatentable over Mentink et al. (U. S. Patent No. 5,314,701). This rejection is respectfully traversed.

The final rejection presents the following issues for appeal:

- I) **Are claims 1, 2 and 4-13 anticipated by Caboche (U. S. Patent No. 5,436,329)?**
- II) **Has the Examiner established a prima facie case of obviousness with respect to claims 1, 2 and 4-13?**

GROUPING OF THE CLAIMS IN THE FINAL REJECTION

The claims do not stand or fall together. Claim 13 is directed to a different embodiment of the present invention which has different claim elements than the rest of the claims and is separately patentable. Accordingly, the claims should be separated into two groups with group I including claims 1, 2 and 4-12 and group II including claim 13. Appellants have provided separate arguments in the following section that are directed to the patentability of claim 13 over the cited prior art.

ARGUMENTS

- I) **Claims 1, 2 and 4-13 are not anticipated by Caboche (U. S. Patent No. 5,436,329).**

The Caboche patent teaches a formulation of hypocariogenic hydrogenated saccharides that contains from 0.1 to 80% of hydrogenated monosaccharides, from 0.1 to 96% by weight of hydrogenated disaccharides, and from 1 to 40% by weight of polysaccharides which are not

hydrolysed by amyloglucosidase in an F test (defined in the patent), with the balance to 100% consisting of hydrogenated oligo- and polysaccharides and with the limitation that the total amount of hydrogenated mono- and disaccharides is from 11 to 96% (see paragraph bridging columns 2 and 3 of the Caboche patent). There is no specific teaching of which polysaccharides are “not hydrolysed by amyloglucosidase” in the F test described in the patent. Accordingly, there is no way that the broad definition of the composition of Caboche contained in the paragraph bridging columns 2 and 3 of the Caboche patent can be said to “anticipate” the invention of the present claims without guesses or assumptions as to the identity of the polysaccharides that are not hydrolysed by amyloglucosidase in the F test. Such guesses or assumptions are an improper method of establishing a *prima facie* case of anticipation. It is well established law that in order to establish a *prima facie* case of anticipation, the cited reference must teach each and every element of the claimed invention. It is impossible from the broad teachings of the Caboche patent to determine the content of the hydrogenated trisaccharides (element C of present claim 1), the content of the hydrogenated oligosaccharides of DP from 4 to 10 (element D of present claim 1) or the content of hydrogenated polysaccharides of DP greater than or equal to 11 (element E of present claim 1). The Examiner’s argument that the teachings of the Caboche patent include a formulation that contains “a balance of hydrogenated oligo and polysaccharides which can amount to less than or equal to 73%” is not sufficient to establish a *prima facie* case of anticipation of claims that recite specific ranges of the species of components that fall within the genus described by “oligo and polysaccharides”. For example, where in the Caboche patent is it disclosed that the formulations contain less than 15% by weight of hydrogenated trisaccharides (element C of present claim 1) or less than 30% by weight of

hydrogenated quat- to deca-saccharides (element D of present claim 1) or 14 to 38% by weight of hydrogenated polysaccharides with a degree of polymerization greater than or equal to 11 (element E of present claim 1)? Without disclosing either: (1) an individual species that falls within each of the ranges specified for the elements recited in present claim 1; or (2) generic ranges for each of the elements that are recited in present claim 1 that overlap with the ranges recited for each of those elements, the Caboche patent cannot anticipate the present claims (e.g., in the same way that the disclosure of a genus in a reference does not anticipate a later claim directed to a species within that genus). Accordingly, it is respectfully submitted that the broad generic teachings of the Caboche patent are not sufficient to establish a *prima facie* case of anticipation with respect to the particular species that are being claimed in the present application.

The specific teachings of the Caboche patent that are contained in the working examples do not contain a single formulation that falls within the scope of the present claims. Accordingly, the specific teachings of the Caboche patent cannot be the basis for a *prima facie* case of anticipation. Further, the fact that none of the formulations described in the working examples fall within the scope of the present claims is strong evidence that the broad definition of the composition that is contained in the paragraph bridging columns 2 and 3 of the Caboche patent does not define a composition that falls within the scope of the present claims. Still further, the fact that none of the formulations described in the working examples fall within the scope of the present claims supports appellant's position that there is no reason to expect that the broad definition of the composition that is contained in the paragraph bridging columns 2 and 3 of the Caboche patent could define a composition that falls within the scope of the present claims.

In view of the above, it is respectfully submitted that the present claims are not anticipated by the Caboche patent.

In addition, with respect to present claim 13, there is no teaching in the Caboche patent of powder particles comprising malic acid or a mixture of acidulants encapsulated within a coating comprising the hydrogenated starch hydrolysate of present claim 1. The Examiner's only comment with regard to claim 13 was that the inclusion of an acidulant was not seen to be novel over the prior art as the use of acidulants in this food art is common practice. Initially, it is respectfully submitted that an anticipation rejection must be based on prior art that teaches each and every element of the rejected claim. If one or more elements of the rejected claim is missing from a prior art reference, then a *prima facie* case of anticipation cannot be established using that reference. It is axiomatic that an Examiner's unsupported opinion as to whether or not the element of a claim that is missing from the references is "novel" is irrelevant and cannot be used as the basis for an anticipation rejection. If the Examiner believes that the prior art shows the combination of acidulants and the hydrogenated starch hydrolysate that is claimed in present claim 13, then the Examiner should cite prior art that shows this combination. If the Examiner is relying on his own personal knowledge that such a combination is not novel, then appellants request that the Examiner spell out this personal knowledge in detail in the form of an affidavit as contemplated in 37 C.F.R. 1.104(d)(2). Further, in the matter at hand, appellants respectfully submit that claim 13 does not generally claim the use of an acidulant in combination with the hydrogenated starch hydrolysate of claim 1. Instead, in this claim the composition of matter being claimed is powder particles of malic acid or a mixture of acidulants encapsulated within a coating of the hydrogenated starch hydrolysate. There is simply no teaching

whatsoever in the cited references of powder particles having a structure wherein acidulants are encapsulated within a coating of hydrogenated starch hydrolysate. Accordingly, claim 13 is clearly not anticipated by the cited reference.

In view of the foregoing, it is respectfully submitted that the anticipation rejection over the Caboche patent should be reversed.

II) The Examiner has not established a prima facie case of obviousness with respect to claims 1, 2 and 4-13.

The rejection of claims 1, 2 and 4-13 under 35 U.S.C. 103 (a) as being unpatentable over Mentink et al. (U. S. Patent No. 5,314,701) is respectfully traversed.

The Mentink et al. patent teaches a sugar free hard candy with a multilayer structure. The candy can contain an HSH syrup. The broadest definition of the HSH syrup that appellants could find in the Mentink et al. patent was at column 6, lines 35 - 40, which defined the HSH syrup as having the following composition: a sorbitol (DP=1) content of 0.1 to 19% and a maltitol (DP=2) content of 35 to 90% with the complement to 100% consisting of polyols with a DP greater than 2. This definition is too vague to anticipate the present claims, which recite specific amounts of the hydrogenated saccharides in defined DP ranges. Further, this definition does not even encompass the presently claimed HSH because it calls for 35 to 90% maltitol (DP=2) and the present claims recite a content of hydrogenated disaccharides of less than 34.3 wt.-%. Although the Mentink et al. patent has further preferred definitions of the HSH syrup which specify the amounts of hydrogenated

saccharides in the various DP ranges (see for example column 6, lines 40 - 60), none of these definitions is specific enough to "anticipate" the HSH of the present claims (i.e., teach each and every element of the claims). Furthermore, these preferred definitions of the HSH syrup also define syrups that are not encompassed by the present claims. Finally, none of the specific formulations that are described in the examples of the Mentink et al. patent fall within the scope of the present claims.

In view of the above, it is respectfully submitted that the Mentink et al. patent does not teach each and every element of the present claims. Accordingly, as the Examiner has now acknowledged, the Mentink et al. patent cannot be the basis for a *prima facie* case of anticipation.

With respect to the Examiner's current position that these claims are obvious over the Mentink et al. patent, appellants note that the only support that the Examiner has provided for his position is that the minimum amount of the hydrogenated disaccharides specified in the Mentink et al. patent (i.e., 35 %) is close to the maximum amount of hydrogenated disaccharides specified in claim 1 of the present application (i.e., 34.3 wt. %) and that one of skill in the art would allegedly not recognize a statistically significant difference between 34.3% and 35%. This argument is clearly insufficient to establish a *prima facie* case of obviousness. The Examiner has not provided any explanation of why an artisan of ordinary skill would be motivated to modify the amount of hydrogenated disaccharides specified in the Mentink et al. patent to a level below the minimum amount specified in the patent. Without an explanation of how or why the artisan would find such motivation from the teachings contained in the Mentink et al. patent, there can be no *prima facie* case of obviousness.

In addition, with respect to claim 13, there is no teaching in this reference of powder particles comprising malic acid or a mixture of acidulants encapsulated within a coating comprising the hydrogenated starch hydrolysate of present claim 1. The Examiner's only comment with regard to claim 13 was that the inclusion of an acidulant was not seen to be novel over the prior art as the use of acidulants in this food art is common practice. It is respectfully submitted that it is axiomatic that an Examiner's unsupported opinion as to whether or not the element of a claim that is missing from the references is "novel" is irrelevant to a rejection under 35 U.S.C. 103(a). If the Examiner believes that the prior art shows the combination of acidulants and the hydrogenated starch hydrolysate that is claimed in present claim 13, then the Examiner should cite prior art that shows this combination. If the Examiner is relying on his own personal knowledge that such a combination is not novel, then appellants request that the Examiner spell out this personal knowledge in detail in the form of an affidavit as contemplated in 37 C.F.R. 1.104(d)(2). Further, it is respectfully submitted that claim 13 does not generally claim the use of an acidulant in combination with the hydrogenated starch hydrolysate of claim 1. Instead, in claim 13 the composition of matter being claimed is powder particles of malic acid or a mixture of acidulants encapsulated within a coating of the hydrogenated starch hydrolysate. There is simply no teaching or suggestion whatsoever in the cited reference of powder particles having a structure wherein acidulants are encapsulated within a coating of hydrogenated starch hydrolysate. Accordingly, claim 13 is clearly not anticipated or rendered obvious by the cited reference.

Moreover, it is respectfully submitted that an Examiner cannot find that an element of the claims at issue that is missing from the disclosure of a reference is an obvious element without citing

a secondary reference that is properly combinable with the primary reference and shows the missing claim element. The Examiner's "opinions" on such matters are simply irrelevant and cannot be the basis for a *prima facie* case of obviousness.

In view of the foregoing, it is respectfully submitted that the rejection under 35 U.S.C. 103 (a) over the Mentink et al. patent should be reversed.

CONCLUSION

The Examiner has not established that any of claims 1, 2 or 4-13 is anticipated by the Caboche patent. The teachings of the Caboche patent are deficient for the reasons set forth above. Basically, the Caboche patent contains generic teachings that encompass a broad range of formulations but does not contain specific teachings of the species of hydrogenated starch hydrolysate claimed in the present application. In addition, the Caboche patent contains no teachings whatsoever of the powder particles claimed in claim 13. The Mentink et al. patent does not disclose or suggest the hydrogenated starch hydrolysate or powder particles of the present claims and the Examiner's unsupported opinions as to whether or not the differences between the claimed invention and the teachings of the patent are "obvious" are irrelevant without some teaching or suggestion in the cited reference which would motivate an artisan of ordinary skill to modify the reference in a manner which would result in the claimed invention.

Accordingly, it is respectfully submitted that all of the Examiner's rejections are incorrect and should be reversed.

Respectfully submitted,
CONNOLLY BOVE LODGE & HUTZ LLP

By



William E. McShane
Registration No. 32,707
Telephone: 302/658-9141

WEM/185081

Enclosures: Appendix I
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APPENDIX I

1. Hydrogenated starch hydrolysate, comprising
 - A. a content of hydrogenated monosaccharides, degree of polymerization equals 1, of from about 2.6 to about 7.7 wt.-%;
 - B. a content of hydrogenated disaccharides, degree of polymerization equals 2, of less than or equal to 34.3 wt.-%;
 - C. a content of hydrogenated trisaccharides, degree of polymerization equals 3, of less than 15 wt.-%;
 - D. a content of hydrogenated oligosaccharides of hydrogenated quat- to deca-saccharides, degree of polymerization equals 4 to 10, of less than 30 wt.-%; and
 - E. a content of hydrogenated polysaccharides of greater than hydrogenated decasaccharides, degree of polymerization is greater than or equal to 11, of about 14 to about 38 wt.-%.
2. The hydrogenated starch hydrolysate according to claim 1, wherein the content of hydrogenated oligosaccharides of degree of polymerization equals 4 to 10 is about 16.0 to about 29.3 wt.-%.
4. The hydrogenated starch hydrolysate according to claim 3, wherein the content of hydrogenated monosaccharides of degree of polymerization equals 1 is about 2.8 to about 3.7 wt.-%.
5. The hydrogenated starch hydrolysate according to claim 1, wherein the content of

hydrogenated polysaccharides of degree of polymerization greater than or equal to 11 is about 22.5 to about 37.1 wt.-%.

6. The hydrogenated starch hydrolysate according to claim 1, wherein the content of components A to E is as follows:

- A. from about 2.6 to about 7.7 wt.-% of said hydrogenated monosaccharides, degree of polymerization equals 1;
- B. from about 21.4 to about 34.3 wt.-% of said hydrogenated disaccharides, degree of polymerization equals 2;
- C. from about 8.9 to about 13.6 wt.-% of said hydrogenated trisaccharides, degree of polymerization equals 3;
- D. from about 16.0 to about 29.3 wt.-% of said hydrogenated oligosaccharides, degree of polymerization equals 4 to 10; and
- E. from about 22.5 to about 37.1 wt.-% of said hydrogenated polysaccharides of greater than hydrogenated decasaccharides, degree of polymerization is greater than or equal to 11.

7. The hydrogenated starch hydrolysate according to claim 6, wherein the content of components A to E is as follows:

- A. from about 2.8 to about 3.7 wt.-% of said hydrogenated monosaccharides, degree of polymerization equals 1;
- B. from about 25.8 to about 34.3 wt.-% of said hydrogenated disaccharides, degree of polymerization equals 2;
- C. from about 10.4 to about 12.2 wt.-% of said hydrogenated trisaccharides, degree of

polymerization equals 3;

D. from about 24.5 to about 29.3 wt.-% of said hydrogenated oligosaccharides, degree of polymerization equals 4 to 10; and

E. from about 22.5 to about 29.2 wt.-% of said hydrogenated polysaccharides of greater than hydrogenated decasaccharides, degree of polymerization is greater than or equal to 11.

8. The hydrogenated starch hydrolysate according to claim 1, wherein the hydrogenated starch hydrolysate has a final point glass transition temperature of from about 67°C - 92°C.

9. Sugarless hard boiled candy comprising the hydrogenated starch hydrolysate according to claim 1.

10. The sugarless hard boiled candy according to claim 9, further comprising at least one crystallizable polyol.

11. The sugarless hard boiled candy according to claim 10, wherein the at least one crystallizable polyol is at least one polyol selected from the group consisting of maltitol, isomalt, mannitol, erythritol, lactitol, sorbitol, xylitol and polydextrose.

12. A product comprising:

(A) a hydrogenated starch hydrolysate comprising

- i. a content of hydrogenated monosaccharides, degree of polymerization equals 1, of from about 2.6 to about 7.7 wt.-%;
- ii. a content of hydrogenated disaccharides, degree of polymerization equals 2, of less than or equal to 34.3 wt.-%;
- iii. a content of hydrogenated trisaccharides, degree of polymerization equals 3,

of less than 15 wt.-%;

- iv. a content of hydrogenated oligosaccharides of hydrogenated quat- to decasaccharides, degree of polymerization equals 4 to 10, of less than 30 wt.-%; and
- v. a content of hydrogenated polysaccharides of greater than hydrogenated decasaccharides, degree of polymerization greater than or equal to 11, of about 14 to about 38 wt.-%; and

(B) at least one secondary ingredient selected from the group consisting of colorants, intense sweeteners, fillers, flavorants, acidulants, plant extracts, vitamins and pharmaceutical active ingredients.

13. Powder particles comprising malic acid or a mixture of acidulants encapsulated within a coating comprising the hydrogenated starch hydrosate according to claim 1.